REP 1994-112

1994. POSTER HG17. Page 245 *in* SETAC 15th Annual Meeting
(October 30-November 3, 1994, Denver, Colorado)

HG17 Limitations of Open-hole and Plot-occupancy Indices in Field Efficacy Studies with Townsend's Pocket Gophers. G. H. Matschke, R. T. Sterner, and R. M. Engeman, USDA/APHIS Denver Wildlife Research Center, Denver, CO and J. M. O'brien, Nevada State Department of Agriculture, Reno, NV. Efficacy of strychnine-alfalfa baits to control Townsend's pocket gophers (*Thomomys townsendii*) in irrigated alfalfa was assessed near Winnemucca, NV. Open-hole (OH) and plot-occupancy (PO) indices of gopher activity were used pre and postapplication of baits. OH involves manually opening 2 burrow systems per plot and counting closures after 48 hrs.; PO involves obliterating gopher mounds/plugs and counting fresh mounds/plugs after 48 hrs. Five blocks each containing 4, ≈2.5 ha bait-treatment units were set up -- 0.5%, 1.5%, and 3.0% strychnine-alfalfa bait units plus a 0.0% (control) unit. Units were composed of 25, 5-m-radius sample plots harboring ≥1 gopher. Analyses of variance yielded significant main effects for OH and PO counts -- a statistical but not field-practical effect. OH activity averaged 97.9% and 91.6% pre and postapplication, respectively; whereas, the PO index averaged 63.4% and 46.1% pre and postapplication, respectively. No significant sources of variance due to strychnine-bait concentration occurred. Upon completion of the study, 15 burrow systems were trapped; 11 systems contained 2-4 gophers. Multiple occupancy violates the 1 gopher/burrow assumption required to validate OH; the PO index consistently provided false negative occupancy. Additional biological data on social factors affecting OH/PO indices are needed. These data could suggest possible modifications to EPA's Pesticide Assessment Guidelines for Subdivision G, Product Performance §96-12, 40 Code of Federal Regulations.